Title (en)

Semi-conductor optical amplifier with short switching time.

Title (de)

Optischer Halbleiterverstärker mit kurzer Schaltzeit.

Title (fr)

Amplificateur optique à semiconducteur à faible temps de commutation.

Publication

EP 0554178 A1 19930804 (FR)

Application

EP 93400210 A 19930128

Priority

FR 9201083 A 19920131

Abstract (en)

[origin: JPH05275807A] PURPOSE: To achieve short switching times, without the need of high excitation and limiting operation temperature range by generating a laser effect with a wavelength corresponding to a deep quantum well, and amplifying light with a wavelength corresponding to a shallow quantum well. CONSTITUTION: A shallow and narrow quantum well P1 is formed on a first layer 12, and a deep and wide quantum well P2 which is continuously connected with the well P1 is formed on a third layer 16, on the opposite side of a potential barrier BP corresponding to a second layer 14. An optical amplifier has two transmission material layers. An antireflection layer for preventing the reflection of a wavelength λ1, corresponding to the energy of a forbidden band Eg1 in a first semiconductor forming the transmission material layers and the shallow, and narrow quantum well P1 is constituted. A partial reflecting layer for reflecting a wavelength λ2, corresponding to the energy of a forbidden band Eg3 in a third semiconductor forming the deep and wide quantum well P2 is constituted. Light amplification is generated at the wavelength λ1, corresponding to the shallow and narrow quantum well P1, and laser oscillation effect is generated at the wavelength λ2.

Abstract (fr)

L'amplificateur de l'invention comprend un puits peu profond et étroit (P1) où a lieu l'amplification et un puits profond et large (P2) chargé de recueillir les porteurs après cessation de l'excitation, ce puits étant vidé par effet laser. Application en télécommunications optiques. <IMAGE>

IPC 1-7

H01L 33/00; H01S 3/19; H01S 3/25

IPC 8 full level

H01S 5/00 (2006.01); **H01L 33/06** (2010.01); **H01S 5/50** (2006.01); H01S 5/34 (2006.01)

CPC (source: EP US)

B82Y 20/00 (2013.01 - EP US); **H01L 33/06** (2013.01 - EP US); **H01S 5/50** (2013.01 - EP US); H01S 5/3418 (2013.01 - EP US); H01S 5/3428 (2013.01 - EP US)

Citation (search report)

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- [A] US 4745452 A 19880517 - SOLLNER T C L GERHARD [US]
- [A] EP 0390167 A2 19901003 - CANON KK [JP]
- [XP] EP 0483687 A2 19920506 - CANON KK [JP]
- [A] APPLIED PHYSICS LETTERS. vol. 59, no. 5, 29 Juillet 1991, NEW YORK US pages 504 - 506 S. IKEDA ET AL. 'Evidence of the wavelength switching caused by a blocked carrier transport in an asymmetric dual quantum well laser'
- [A] APPLIED PHYSICS LETTERS. vol. 55, no. 12, 18 Septembre 1989, NEW YORK US pages 1155 - 1157 S. IKEDA ET AL. 'Asymmetric dual quantum well laser-wavelength switching controlled by injection current'

Designated contracting state (EPC)

DE GB

DOCDB simple family (publication)

EP 0554178 A1 19930804; **EP 0554178 B1 19970723**; DE 69312339 D1 19970904; DE 69312339 T2 19980129; FR 2687011 A1 19930806; FR 2687011 B1 19940708; JP 3215531 B2 20011009; JP H05275807 A 19931022; US 5283688 A 19940201

DOCDB simple family (application)

EP 93400210 A 19930128; DE 69312339 T 19930128; FR 9201083 A 19920131; JP 1414293 A 19930129; US 913893 A 19930126